



ICI MAGAZINE

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Consuelo Allen Tony Edwards Tim Goodwin Alan Kemble W. F. Osborne Richard Young

CONTRIBUTORS

Consuelo Allen is of mixed descent, Spanish on her father's side, Irish on her mother's, born in Paris and brought up partly in France, partly in Spain and partly in England. Her grandfather, Manuel Linares Rivas, was a well-known playwright with over 70 plays to his name. Consuelo Allen worked for six years with ICI's Spanish company, Azamon. She is now the wife of Mr. P. C. Allen, one of ICI's Deputy Chairmen.

Tony Edwards joined the Paints Division at Slough in 1948 as a commercial trainee. The following year he left for National Service, returning to Slough in 1951, where he spent six years in Export Sales. He joined ICI Paints (West Indies) Ltd. in 1960, where he is in charge of sales and publicity.

Tim Goodwin joined the former Metals Division in 1948 after war service in Italy with an armoured cavalry regiment. From 1953 to 1961 he was a metals representative in the Southern Region, later becoming commercial manager at the Impalco Waunarlwydd Plant. Recently he moved to Impalco HQ at Witton to manage public relations and advertising. His outside interests include the Yeomanry Territorial Army, music, poetry, swimming and walking, and he still occasionally dabbles in a few ball games.

Alan Kemble is deputy manager and sales manager of ICI (Export) West Africa. Educated at Bristol and Edinburgh Universities, he joined Plant Protection Ltd., an ICI subsidiary, in 1955 as a chemist. The following year he was transferred to ICI (Export) West Africa. In 1959 he became head of the Agricultural Department and in 1961 was appointed to his present post.

W. F. Osborne, formerly production director of Fibres Division, joined the staff of Brunner Mond Ltd. in 1926 and during 17 years at Winnington was engaged on a wide variety of engineering projects. On his return from a visit to the USA on ICI business in 1943, about which he writes on page 26, he was appointed to the newly set-up Fibres Development Department at Welwyn, and played a leading part in the negotiations and development work that led to ICI's entry into the field of synthetic fibre manufacture. He retired in 1960 after 34 years' service.

Richard Young is the licensing manager of Agricultural Division and as such is engaged in technical liaison with licensees and clients for the various processes of the Division that are available under licence. After 15 years in the Billingham Research Department, engaged among other things on catalyst research, he moved to Heysham Works in 1954, returning to Billingham in 1958 to become project manager for the first of the Division's pressure naphtha reformers.

Front cover: Carnival, Trinidad, by Tony Edwards

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W. S. C.

No periodical printed in the English tongue should leave unrecorded the passing of the greatest Englishman of our time, perhaps of all times.

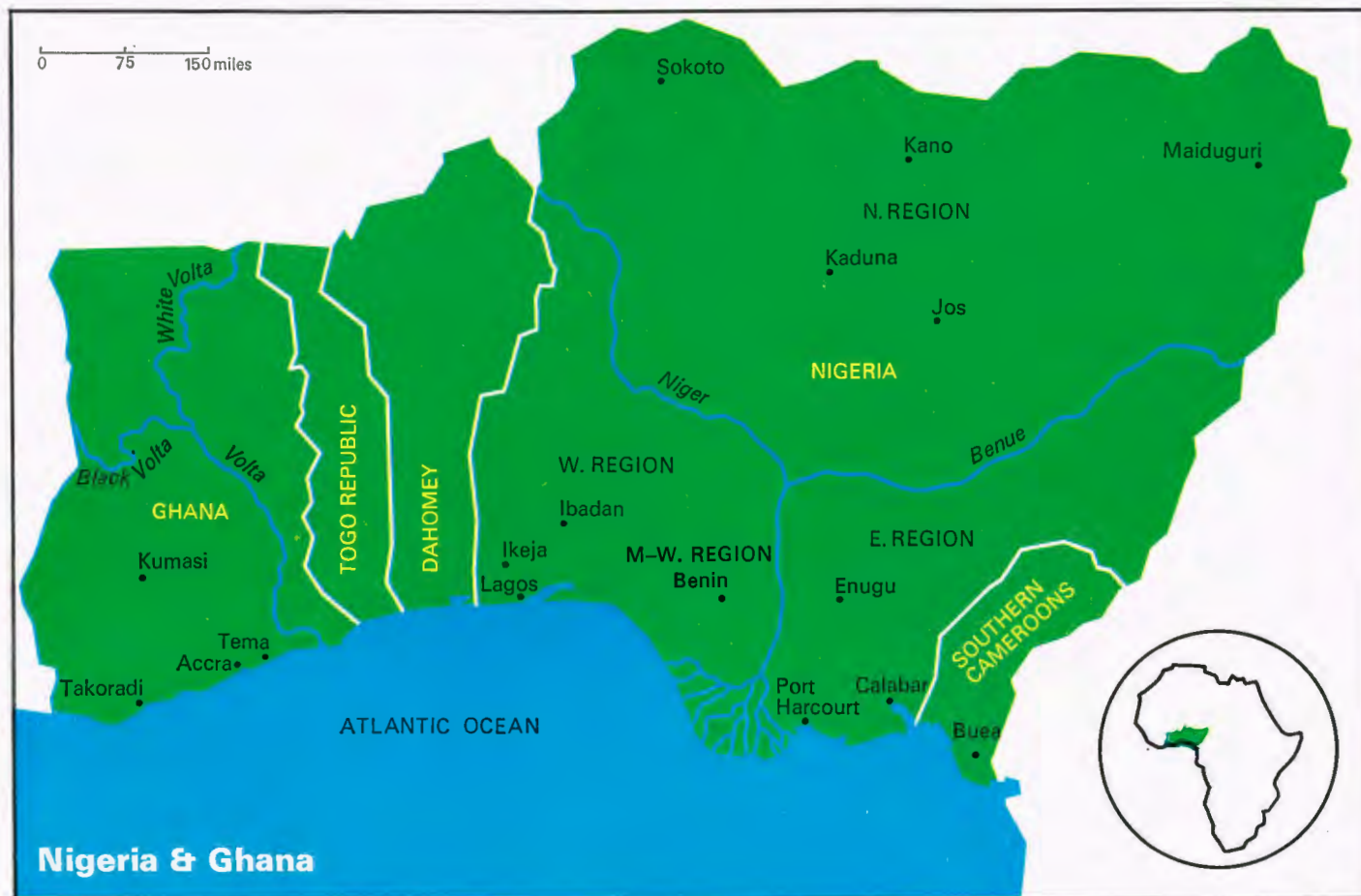
Long before his death, of course, the fires of controversy had subsided and his place was as secure in the hearts of his fellow-countrymen as it already is in the pages of history.

It would be as superfluous as it would be presumptuous to speak here of his qualities and his genius. He was the pilot in our mortal storm. Against all obstacles and in face of all perils he brought us to port. When defiance was almost Britain's only defence, he uttered words which became bastions. "The song that nerves a nation's heart is in itself a deed." And in the great climax of the world's fate, when, as always, the spirit must do what the flesh cannot, and leadership and leadership alone could muster unsuspected strength for our enfeebled arms, he breathed such an inspiration as turned anguish into pride.

The time is now for epitaph. Let it for this occasion be that which Tennyson engraved for Milton:

"God-gifted organ voice of England."

H.M.



ICI in West Africa *by Dr. A. R. Kemble*

Imperial Chemical Industries (Export) Limited in West Africa is one of the youngest of ICI's overseas companies. It was formed early in 1957 to serve the Company's interests in an increasingly important market.

Before 1957, sales of most ICI products were made through London confirming houses or through British merchanting companies, such as the United Africa Company, which had branches throughout the territory. Indeed, the United Africa Company was the official agent for many ICI Divisions. The first ICI Divisions in point of fact to appreciate the value of having permanent representation on the Coast were Pharmaceuticals Division and Plant Protection Ltd. IC Pharmaceuticals was started in 1955 with an office and warehouse at Apapa, the port of Lagos. Two years later, however, the

staff and the buildings were taken over by the new West Africa branch of ICI (Export) Ltd.

We are probably unique among ICI selling companies in that more than half of our turnover is in products already packed for retail sale. The most important of these are 'Perenox' and 'Gammalin 20' for use against cocoa pests. A factory was built at Tema to produce 'Gammalin 20' for the Ghana market in return for an undertaking from the Ghanaian Government to buy agreed minimum amounts over a three-year period. The contract itself has long since run out, but the provisions of it continue to be observed and in fact we are currently the only supplier of cocoa insecticides to the Government. The only other ICI factory in West Africa is that of ICI (Paints) Nigeria Ltd., which was opened in 1962

at the Ikeja industrial estate on the outskirts of Lagos.

Despite a doubling in sales turnover, the number of British employees with ICI (Export) Ltd. has remained more or less constant at about a dozen, for senior Nigerians and Ghanaians have been engaged to take over much of the work which in the early days was done by staff from Britain. Many of the staff from the region are by now well known to ICI people in the UK, for each year a number have attended the Overseas Courses at Warren House, during which they visit Divisions and sales offices.

A vast territory

The territory is vast, stretching from Dakar in the north-west along 3000 miles of coast to Brazzaville in the south-east and with a hinterland reaching back into the Sahara Desert. Nigeria and Ghana



Top: The Cross River, Nigeria
Left: approaching thunderclouds

account for more than 90 per cent of our turnover, but business with Sierra Leone, Liberia and the Ivory Coast is sufficient to justify regular visits by our representatives, and occasional visits are made to the smaller countries. Timbuktu is within our area, but as yet no one has been invited to visit it!

Initial progress was slow, with many Divisions being understandably hesitant to transfer from their existing agencies to the new ICI selling company. During the last seven years, however, and particularly since the former French and British colonies became independent, it has become increasingly clear that prospects for general merchanting by companies based in Britain would not be bright, and today ICI (Export) Ltd. in West Africa is the agent for

all ICI products, with the two major exceptions of sporting ammunition and salt.

As business has expanded, the organisation has expanded in size: a branch office has been opened in Ghana at the port of Tema, and in Nigeria there are now branch offices at Ibadan and Port Harcourt, with a liaison office at Kano.

Nigeria and the North

The Federation of Nigeria, with a population about the same as that of the British Isles and considerably greater than that of all the other countries in West Africa combined, forms our principal market. It is divided into four regions, plus the Federal Territory and capital of Lagos. Relations between the regions are not always in complete harmony, since, to paraphrase the words of a former Governor-General, there are greater differences in race and temperament between the predominantly Moslem northerner and the predominantly Christian southerner than between the Scandinavian and the Sicilian in Europe.

Kano, in the Northern Region, is one of the major trading centres of Africa, and in its market place most things are possible. Whether you are looking for gold sove-

reigns for a bracelet or Maria Theresa dollars for a necklet, the search will take less time than making the purchase. The asking price will be high. You walk away, but just before you pass from earshot a marginal reduction is shouted. You return, disparage the goods, find further infinitesimal flaws and then raise your offer. So it continues until the gap has been narrowed. Then frequently a coin is tossed to decide which price shall be paid. The Hausa trader is an inveterate gambler and can rarely resist the temptation to close a deal in this fashion.

For ICI (Export) Ltd. indigo is the most valuable product sold in the Northern Region. Indigo is unusual in that the depth of colour increases with the number of times a cloth is dipped. An ordinary working gown will be dipped two or three times, whereas the cloth of the desert Tuareg is dipped seven or eight times until it is almost black. Textile mills are springing up throughout the country, but indigo is still the most widely used dye-stuff and most of it is supplied in 4 oz. tins for use in cottage industries. The headcloths of the Emirs and other dignitaries are given the most laborious treatment.

These cloths are exclusively the work of a group of craftsmen in the village of Kura about twenty miles outside Kano, who use wooden mallets weighing 7 lb. or more to beat solid indigo into a cloth which has already been heavily dyed. The mallets are wielded all day long, achieving an unforgettable rhythm and producing a bronze metallic lustre which is highly prized throughout the north.

Salt, too, is an important trading commodity in the north and much of it is from Winsford, where it is packed into 40 lb. bags carrying the trade marks of the various merchanting companies. Even today, when so much transport is mechanised, caravans of camels set out from Kano loaded with salt for the nomadic tribes of the Sahara.

In the rain forests of the Western Region the cocoa crop has doubled since Plant Protection's 'Perenox' and 'Gammalin 20' pesticides were approved for use by farmers. Though other factors have contributed to this increase, the most important has undoubtedly been the adoption of spraying techniques by the individual cocoa farmers, who number well over a quarter of a million.

Although the average Nigerian is conservative and does not quickly accept new products or new techniques, once he is convinced his loyalty is hard to shake. Consequently, although in the early years there was some disappointment at the pace at which cocoa farmers adopted spraying, there has since been gratification at the way in which 'Perenox' and 'Gammalin 20' have retained their share of the market in the face of competition from newcomers to the field.

Since 1957, and particularly since independence in 1960, Nigeria has by various tax and duty concessions encouraged foreign industrial investment to augment its agricultural economy. This policy has been successful in attracting much light industry, but not as yet the iron and steel mills, the fertilizer factories and the chemical complexes which Nigerians would most like to see. However, the building of textile mills, plastics factories, soap factories and a glassworks has considerably widened the range of our business, so that, like Nigeria, ICI (Export) Ltd. is no longer quite so dependent on agriculture for its prosperity.

Mention must also be made of Nigeria's

rapidly expanding oil industry. New strikes are regularly reported from the Niger delta or just off its shores. Although it was not till 1957 that the first exports were shipped, by 1963 crude oil was the fourth most important export and is likely rapidly to improve its position. A refinery is being built near Port Harcourt, and by 1966 the country should need no imports of the more common petroleum products.

Changing Ghana

Ghana is a smaller, more closely knit country than Nigeria, and because it has mineral wealth to supplement its agricultural economy its people have always been among the most wealthy of West Africans.

Dr. Nkrumah, the President, is steering Ghana rapidly towards his objective of African Socialism. Unfortunately changes in the country's political structure have coincided with a grave shortage of foreign exchange, and this, together with the introduction of import licensing and trade pacts with Eastern European countries, has not made the conduct of business easy. Nevertheless, 'Gammalin 20' from our factory continues to make a worth-while contribution to the well-

being of Ghana and as well to the prosperity of our branch there.

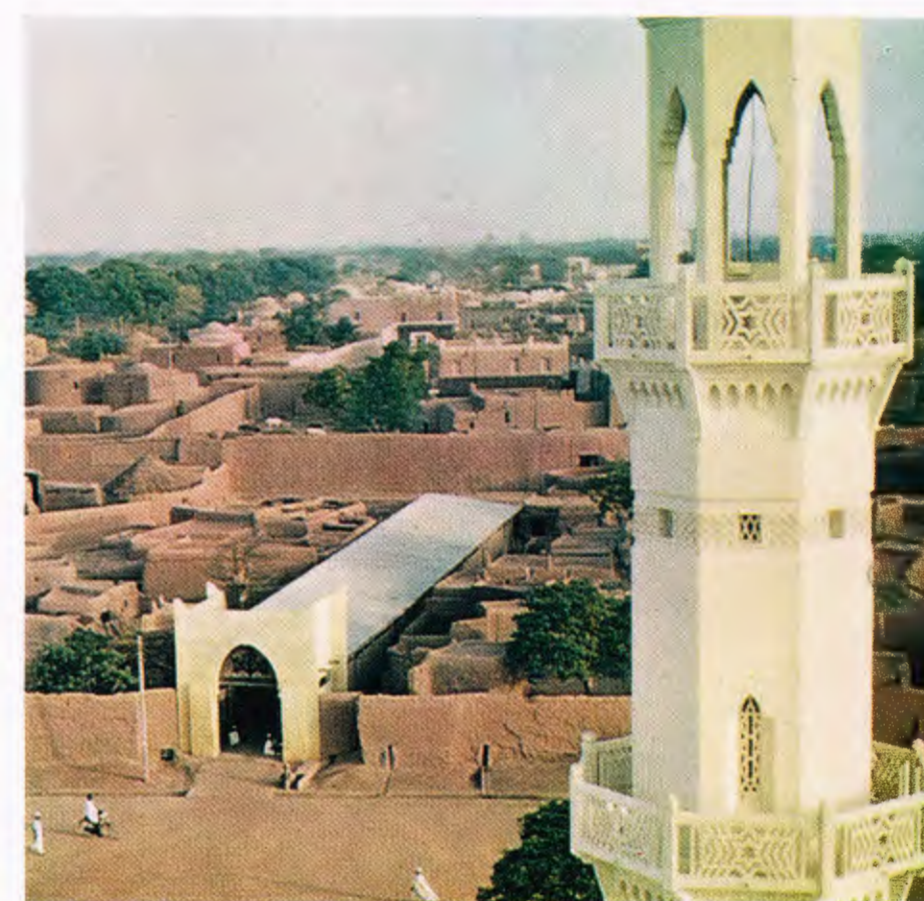
The whole face of Ghana will be changed when in the not distant future the Volta River dam is completed and the water begins to rise to make a gigantic artificial lake well over 200 miles in length. Quite apart from the cheap electric power which will become available as a result of the dam, the creation of such a vast expanse of water is likely to affect the local climate, and with it the vegetation, in a way which cannot as yet be predicted.

Impact of modern hygiene

In recent years, modern drugs and standards of hygiene have reduced infant mortality and raised the expectation of life to such levels that the population of West Africa is growing as fast as anywhere in the world. There is plenty of land, however, and that which is now in use can be made to double or treble its output by the use of improved seeds and fertilizers. (The amount of fertilizer used on food crops throughout Nigeria in 1963 was certainly less than the total used on any dozen large arable farms in Britain during the same period.) Although malnutrition abounds and has yet to be eliminated, the people of West Africa do not have the constant fear of famine which is an overriding problem in so many developing countries. The days when West Africa was "the White Man's grave" are comparatively recent. Only in the last 20 years have antimalarials (notably 'Paludrine'), yellow fever inoculation and polio serums made life comparatively healthy for the European.

The climate is uniformly hot and sticky on the coast, but air conditioners have become standard equipment for bedrooms and offices. Should he so desire, a European in Lagos today can live a life which on the surface has many similarities to life in suburbia. The same sort of van blaring the same peal of bells will deliver ice cream to his door, and the family can spend the evening watching Perry Mason on television or filling in football coupons based on English League matches.

The similarities are superficial, however, and Africa is never far away. It is a saying that one either hates Africa or loves it, but like most sayings it is but rarely true. There are moments of pure wonder, just as there are moments of disappointment and frustration. People are often glad to leave, and as often sorry once they have gone.



Above: The Old City of Kano
Left: Hauling in nets on the Ghana coast

Our associated companies: **IMPALCO**



Imperial Aluminium Company Limited (Impalco) was born in September 1959 out of ICI and the Aluminum Company of America (Alcoa). At first upon a 51% ICI basis, the partnership in aluminium between ICI and the world's largest manufacturer of aluminium has been a 50/50 enterprise since April 1962. Today the Impalco Group consists of six companies concerned with the processing and marketing of aluminium in many forms, from ingot to finished product.

Alcoa and the history of aluminium

The American aluminium industry was founded in 1888 on the basis of an invention which was worked out by Charles Martin Hall, a young college student who hit on the electrolytic process for obtaining aluminium from its refined ore. He was not the first person to seek a cheap method of producing aluminium. Ever since 1808, when the illustrious Sir Humphry Davy announced his belief that a plentiful compound, alumina, was the oxide of an undiscovered metal, fellow scientists had been making efforts to obtain this new element. In 1825 the Danish physicist, Hans Christian Oersted, made but a tiny morsel in the laboratory by chemical means. Around 1845, a German scientist, Wöhler, produced a few pinhead pieces of the new metal to demonstrate its amazingly light weight.

In France, a chemist, Henri Saint-Claire de Ville, made the first bar of aluminium, which he displayed at the Paris exhibition of 1855, where it caught the eye of Napoleon III.

Also, with aluminium still around £3 per lb., Charles Martin Hall became convinced that electricity offered the most promising means of separating aluminium from its compounds. He also decided that alumina, the combination of aluminium and oxygen, was the cheapest and most promising starting material. In 1886, he melted cryolite imported from Greenland in which he dissolved a few particles of alumina, using two carbon electrodes

The Alcoa Building, Pittsburgh, is headquarters of the Aluminum Company of America. Built 12 years ago, it has curtain walling, window sashes and frames, heating and ventilation ducts, water piping and a complete electrical wiring system all made of aluminium, in addition to a complete heating and cooling system made from the metal installed in the ceilings

connected to a battery. When the white cryolite alumina mixture was cool enough to handle, he broke it up with a hammer. There among the pieces were several pellets of silvery aluminium. This 22-year-old American boy had discovered the secret which had eluded the world's scientists for decades. Here was a low-cost process for making aluminium. How right he was is proved by the fact that his invention for the electrolytic smelting of aluminium is basically the same process used throughout the industry today.

The first commercial aluminium ingot was poured in 1888 by the Pittsburgh Reduction Company, of which Charles Martin Hall was one of the founders. In 1907, the company was renamed Aluminum Company of America. Since then, Alcoa has grown from three employees to more than 47,000; from a production rate of 50 lb. per day to a rate of well over 4,000,000; and from one manufacturing

centre to 52 centres in 16 American states and 11 foreign countries.

Why do Americans spell the word aluminum without a second "i"? Legend has it that on the night before the first publicity print was issued, some 75 years ago, a typographical error was discovered which was too late to rectify, and the mistake has been perpetuated ever since.

Events leading to the formation of Impalco

During the 1939-45 war, ICI ran the aluminium factory at Waunarlwydd, Swansea, for the Ministry of Supply. After the war, the plant was purchased from the Government and part of it modernised in 1955. In 1959, discussions between ICI and Alcoa led to the decision to combine their interests in an aluminium partnership; U.S. leadership in aluminium at the time was far ahead, and the movement of U.S. producers into the



Impalco Colour-Sheet is used for exterior panelling of a Fairview caravan



Crown Merton pans, now on sale in the shops, made from Alcoa 'Duranel,' with stainless steel inside for easy cleaning and aluminium outside for even cooking. Pastry (right) in 'Foilpak' seamless foil containers by Impalco Foils Ltd.



British market was inevitable. In 1960, ICI and Alcoa together purchased Invicta Foils of Barking, an old-established aluminium foil manufacturer, followed by the Foil Container Division of Prestige Ltd., and lastly the Almin Group which was formed in 1945 by the late Col. W. C. Devereux, a dynamic chairman who believed that the best way to develop the market for aluminium was to offer it from foundry ingot to finished product with development, research and design facilities thrown in. Almin had initiated or developed many aluminium products, notably the Dome of Discovery for the Festival of Britain (for which ICI supplied large tonnages of metal), prefabricated buildings for export, the first all-aluminium aircraft hangar in the world, still very much in use at London Airport, and telescopic gangways for the "Queen" class transatlantic liners. Almin were as anxious as ICI to exploit aluminium on a sound commercial basis, and it was technically and commercially intelligent to combine their interests in Impalco.

The past five years

During the last five years the Impalco Group has made big strides forward. The Waunarlwydd factory of Imperial Aluminium Company (Wales) Ltd., makers of sheet, strip, plate, rod, wire, tube and extrusions, has undergone a major reconstruction costing more than £5,000,000. The rolling mill designed by Alcoa is probably the finest and most advanced of its size in Europe. Rolling mill capacity has been more than tripled.

Amidst a host of technically ultra-modern and efficient equipment, the most outstanding addition, in order to meet the demand for coloured aluminium, is the strip coater for prepainting aluminium sheet or coil in widths up to 60 in. in a range of 50 brilliant baked-on colours. This is the widest paint line in Europe, and Impalco alone can offer at present, with the help of ICI paints, such a wide range of different stoved-on colours.

Southern Forge

Southern Forge, with many years experience of making high-quality aircraft forgings and engine components, have had new forging plant, and their extrusion and drawn tube facilities have been completely re-equipped. Some of the thinnest and lightest extrusions in the industry are produced by Southern Forge.

International Alloys

International Alloys, Aylesbury, are the largest and most knowledgeable producers of aluminium foundry ingot in Europe. They are also one of the world's largest buyers of scrap, and their development of laboratory control techniques has completely altered the status of aluminium alloys recovered from scrap. A recent major advance pioneered by Intal is the provision of a Molten Metal Service to transport aluminium in the molten state direct to customers' factories. Molten aluminium alloy is delivered by road in sealed insulated containers of 2½-ton capacity mounted on special motor transporters designed by Intal engineers.

Pressoturn

Pressoturn, of Leamington Spa, are acknowledged experts in bulk materials handling. Their Tote System, developed for the transport and handling of granular material, liquids, and powders, is now widely used throughout Europe to carry thousands of tons of material in the chemicals, pharmaceuticals, rubber, plastics and food industries. The secret lies

in the design of the "Tote Bins" and also in the harnessing to specially designed tilting units, which enables the products carried to be taken off one manufacturing process stream and conveyed right on to the production line of another. At no time between filling the bin and using the load at the point of production is it necessary for the substance to be handled.

The Tote System is widely used between the ICI Billingham and Wilton plants and the British Nylon Spinners Works at Doncaster, Gloucester and Pontypool, where some 2500 bins are in use. ICI Dyestuffs Division also use Tote Bins for conveying adipic acid, and propose to use them for conveying nylon salt from Wilton to their new nylon polymer plant at Rozenburg near Rotterdam.

Warwick Production Ltd.

Warwick Production Ltd., of Warwick, are owned jointly by Impalco and Marston Excelsior, a subsidiary of Imperial Metal Industries Ltd. Almost every fabricating skill that can be applied to Impalco wrought aluminium is to be seen at Warwick. They too specialise in the

development of equipment used in materials handling. Thousands of food trays and containers pour from the factory, which also manufactures Tote Bins. Specially designed Warwick fish boxes and kits have ensured hygienic and economical handling of fish in trawlers and at fishing ports. Milk churns, vacuumised containers, aircraft practice bombs and a complete textile handling system, are included in the wide range of aluminium presswork, spinning and fabrication undertaken by Warwick.

Impalco Foils

Impalco Foils, Barking, one of the oldest-established foil suppliers but now most modernly equipped, take foilstock from Impalco at Waunarlwydd for raw material. Apart from making foil for every purpose from cigarette packaging to cable wrapping, the company is the largest U.K. manufacturer of foil containers for the food industry. Readers are unlikely not to have used Impalco Foilpak containers at one time or another, for Foilpak, available in 150 different shapes, can be seen in Lyons tearooms, around pies and pastries, in 'Birds Eye' frozen foods, and almost everywhere one looks.

Sales, development and marketing services

At Impalco Headquarters in Birmingham, a team of metallurgists and engineers with marketing experience draws on Alcoa experience. The sales of wrought aluminium products of Impalco Wales, Southern Forge and Impalco Foils are effected through an area sales organisation consisting of area sales managers and representatives with specialist experience in aluminium, based on area offices at Birmingham, Bradford, Bristol, Glasgow, London and Manchester and making use of ICI office facilities.

Aluminium in everyday use

Today, versatile aluminium is used in countless ways, some quite new, others comparatively traditional. Impalco for example supplied much of the sheet and extrusions for the famous "silver" Underground trains and for British Railways diesel and diesel-electric railcars. The new Liner Train prototype is to be built on an all-Impalco underframe. Impalco is a major supplier of specially designed extruded sections and body quality sheet for the construction of lorry and van bodies

to reduce weight and increase payload. Their latest product is Impalco-Rib, a ribbed and interlocking sheet system for cladding van bodies and trailers. Impalco Colour Sheet from the Waunarlwydd paint line, brilliant in appearance, resistant to impact and abrasion and easily fabricated by conventional methods, is bringing a new look to the panelling of caravans. For buses, Impalco, with the aid of ICI Paints Division, have developed a nicotine resistant Colour Sheet enabling internal panels to be kept stain-free.

Grilles, radiator surrounds, bumpers and mouldings for motor cars are frequently made from high-purity aluminium. Impalco, having early experience of this market, now offers a one-side-bright material from Waunarlwydd to compete with the conventional materials.

In building and architecture, use of Impalco aluminium is increasing considerably, especially for windows, curtain walling and cladding, although low-priced steelmakers resist keenly all attempts at substitution. For roofing and cladding, Impalco makes the longest profiled sheet in the U.K., and recently exported sheet 82 ft. long to Europe. Colour Sheet in profiled form is being developed.

Aluminium scaffolding tube from Southern Forge is popular both with contractors and workmen. Its light weight and smooth surface make it easy to handle and erect. It also has a high scrap recovery value.

Undoubtedly, the rapid rise in the price of copper intensified the battle between it and aluminium. Although electrical conductivity of aluminium is but 61% of copper, there is a three to one weight difference, with a considerable price advantage in favour of aluminium. Impalco were the first to design and erect an all-aluminium prefabricated substation. Eight hundred miles of Impalco foil was specified for use in the Seacom underwater telephone cable.

Impalco aluminium products for the textile industry are supplied in ever-increasing quantities. Millions of textile bobbins made from Impalco drawn tube are in use at ICI Fibres Ltd.

Impalco produces aluminium circles for pots and pans, including a special quality suitable for non stick frying pans coated with ICI 'Fluon.' The latest frying pan development comes from Alcoa—'Duranel' stainless-clad aluminium sheet—a marriage between aluminium and stainless steel in a metallurgical

bond that makes the best use of the two metals in domestic cookware—stainless on the inside for easier cleaning and aluminium on the outside for even cooking! Crown Merton pots and pans made of 'Duranel' can be bought in the shops.

High-frequency welded aluminium tubing now marketed by Impalco finds use in home, office and garden as TV aerials and in tubular furniture, among numerous applications.

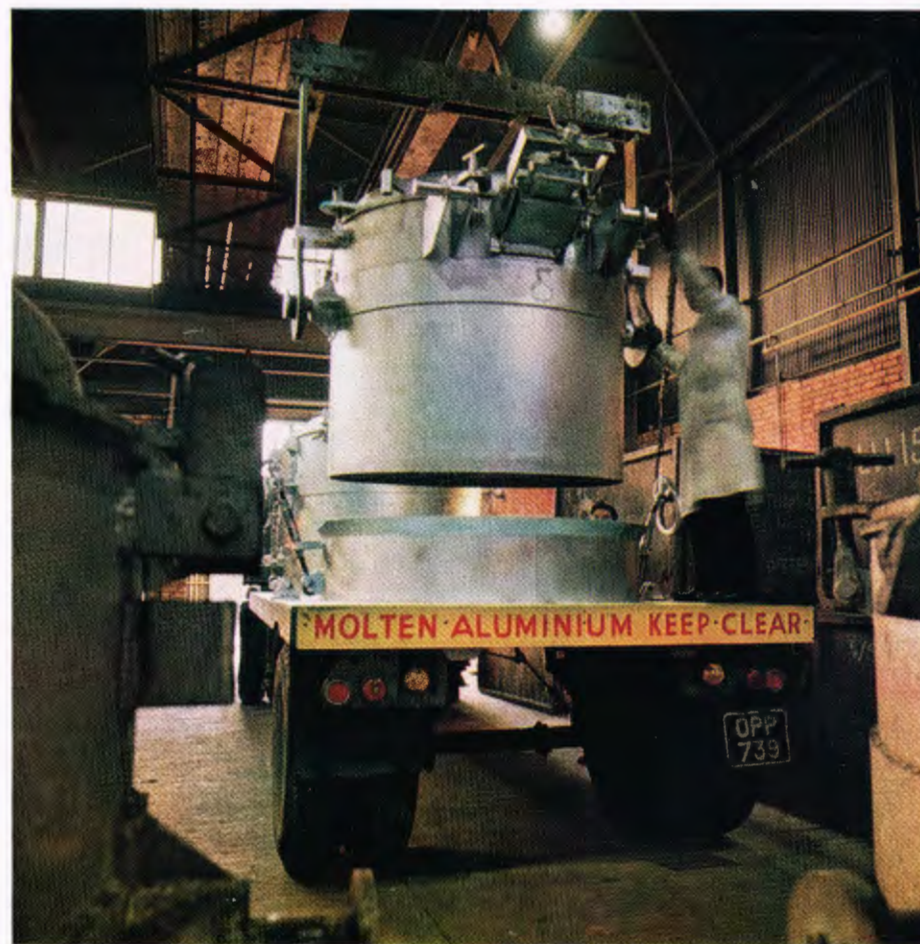
Impalco Superspeed alloys for free machining are growing in popularity, especially due to the rising price of brass. Aluminium alloy machining bar now cuts the price of brass by half and reduces machining costs by about 30%. A wide and expanding range of alloys meets all needs. An interesting but not new domestic use is that by Gillette for razor handles.

Deliberately the Impalco Group does not attempt to make every form of aluminium; Alcoa can fill in all the gaps in the range. Therefore part of the sales and marketing organisation at Witton covers Alcoa agency sales, which are growing fast in aluminium, also alumina chemicals and pigments, none of which compete with ICI. Impalco is sole U.K. selling agent for all Alcoa products. Alcoa aircraft sheet and plate of special alloy, size and quality for stringent requirements, some of which are not met by the products of British mills, are being accepted in increasing quantities by the aircraft industry. Over 50 tons were ordered for the BAC One-Eleven; Alcoa materials are also used in the VC10, the Trident, and the famous TSR2 development.

The Alcoa 'Easy Open Can End', in wide use throughout the U.S.A., is appearing over here as 'Pop Top' in Ind Coope Long Life Beer cans, made by Metal Box. In the U.S.A., nine thousand million beer cans a year have Alcoa ends, but the market spreads much wider to virtually all canned food and drink.

The links between Impalco and Alcoa have been forged into a strong chain. The way has not been easy, for the British market still has an excess of aluminium production capacity chasing insufficient demand. Undoubtedly, however, the aluminium market in the U.K. has great future prospects for growth and, through Impalco, the partnership between ICI and Alcoa will be among the leaders in its development.

TIM GOODWIN 11



A container of molten aluminium is loaded for transport by road

The Chairmen of Divisions

Dr. John M. Holm of Nobel Division

Three factors have of late times adversely affected the fortunes of Nobel Division. Summarised most briefly, these are: loss of overseas business due to increased local manufacture in countries such as India which were previously large customers; decreasing demand at home for explosives for use in the coal mines, due to greater mechanisation; and competition from less orthodox explosives, notably the ammonium-nitrate fuel-oil mixtures, known as A.N.F.O. Diminution in the demand for explosives means also that there is less demand for accessory manufactures such as detonators and fuses, which are an important part of the Division's business.

All of this has resulted in Nobel Division finding itself at grips with a difficult situation, in which, short of some sudden "change of wind" in its commercial prospects, the Division has to look forward to a slow decline in its traditional manufactures, with all the internal and external tensions which such a situation imposes.

The Chairman of Nobel Division, therefore, is a man confronting difficult problems. Dr. Holm is that man. He is fully aware of their seriousness, indulges in no flimsily based optimism, but is not dismayed. Given the tools, the Division will, he is determined, tackle the job. What then are the tools? Sound organisation, good management, and a realistic commercial strategy. The first of these, Dr. Holm believes, is in final process of achievement. Recent changes, he is convinced, have undoubtedly provided a more alive, a more aware, organisation. The Division has been completely reorganised since February 1964. It is now divided into three main product groups—Explosives, Chemicals and Silicones—each under a Director responsible to Dr. Holm for making profits. Each Product Group has its own Production, Sales, Technical Service and Research facilities.

They work as a team, and their activities

are geared to the Group's function. Speculative research, for the Division as a whole, continues under the Research Director and is chiefly concerned with finding new products lying outside the field covered by the three Product Groups.

Dr. Holm is insistent upon the principle of the delegation of authority. He distrusts the committee system. Second only to this is his insistence upon the importance of communication. People must be left to get on with the job, but there are obvious dangers in isolation. People have to be aware of what others are working upon. Dr. Holm has two regular meetings each month with his Directors. Decisions are not taken at them; they are to seek views, to explore, to discuss—to keep everyone, himself included, in touch. This pattern is repeated down the line, with appropriate modifications. The three Product Group directors, for example, have frequent meetings of a similar kind with their senior executives. In the spring and autumn there are meetings with all the Division Managers and the Directors, where Dr. Holm presents a complete financial picture of the Division's affairs. As far as possible he tries to cut down paper work and to have consultations. Every day members of his senior management drop in to consult him upon specific points. The organisation, he considers, is close-knit and effective. Good management means not only the right man in the right place but the proper climate for him to work in. Morale is spinal. After ensuring a Division's prosperity, he regards it as a Division Chairman's first care. A case in point is safety. Dr. Holm is not satisfied with the Division's safety record. He has started a special drive. Every accident on the works is the subject of an investigation by a senior, independent executive, who reports personally to him and makes recommendations.

Dr. Holm believes strongly that there should be closer contact and communica-

tion with the Division's overseas associates. He has initiated a round table conference where the people from all ICI's associated companies overseas who are engaged in making explosives can discuss every kind of commercial and technical problem—on a global basis. The



JOHN GARNER

first conference lasted a week, and he wants to see them held yearly. He would also like to see more visits being paid by Division staff to overseas companies as well as staff from overseas coming for specific consultations. Visitors from India—from the Gomia factory, with the build-

ing of which (from jungle to factory in three years) he was himself closely associated, are particularly welcome. He means to go around more on his own account and hopes his directors will do the same.

Then there is commercial strategy. Not

all the Division's manufactures are declining; with some—notably silicones—there is vigorous growth. On the chemical side, too, trade is expanding steadily and the search for new and profitable chemical manufactures is being actively pursued. Demand for the "non-permitted" explosives (for use on public works, in quarries, etc.) is growing and is helping to offset the loss in coal-mining explosives.

Although the decline in the Division's traditional products means that the Division's turnover will be relatively static for a few years, the battle of the future is to find and exploit new opportunities to create an expanding Division. Dr. Holm regards this as the main challenge facing the Division and is determined to succeed.

Among other outside activities, Dr. Holm takes an interest in technical education, and for a number of years was a Governor of the Royal College of Science and Technology in Glasgow. With the recent creation of the University of Strathclyde he has been invited to become a member of the court of the new University.

Dr. Holm is a quietly speaking Scotsman. He has a slight lisp. His main hobbies are yachts, growing shrubs, and ornithology—he was the fond possessor of a white cockatoo which achieved a considerable local notoriety by flying free and answering to his call. However, eventually, for the peace of the neighbourhood, it had to be lodged in the Edinburgh Zoo. It is, perhaps, a pointer to his character that at an age when many yachtsmen are giving up sail in favour of powered craft, Dr. Holm is doing the reverse. He keeps a Class III ocean racer at Fairlie, which he can see from his home, and at the close of a long summer day, when he gets home from work on one of the occasions that he has not some social engagement, he likes nothing more than an evening sail. Something of the yachtsman's feelings and philosophy may condition his approach to the task of chairmanship, for one senses in speaking to him how much he has his eye on the weather, so to speak, where his Division is concerned. The wind of fortune blows lightly for Nobel Division at the moment and the tide is somewhat on the ebb—like a good yachtsman Dr. Holm and his "crew" are alert for any change of wind and tide, are quick and ready to shift sail to take advantage of it and steer the best course possible.

NEW COMPANY APPOINTMENTS

As was recently announced, ICI has decided to create two new classes of appointment for its more outstanding scientists—Senior ICI Research Associate and ICI Research Associate.

Those who are granted the title of Senior ICI Research Associate will necessarily be few in number, but they will hold a position approximately equivalent to that of a research department manager or of a senior professor at a university.

Men and women from all scientific disciplines are eligible for consideration for ICI Research Associateships, without qualification of age or length of service.

The appointments are being made by a panel of scientists under the chairmanship of ICI's Research Director, Dr. Caress, and including among its members the Head of the Company's Central Research and Development Department and the research directors of some ICI Divisions. Professor R. S. Nyholm, of University College, London, is a member of the panel, which also seeks advice when necessary from other eminent people in academic life who are familiar with the particular specialist fields. Exceptional scientific ability, demonstrated by the generation of an unusual number of original and valuable ideas, special expertise in some subject of vital ICI interest, or evidence of a national or international reputation will be among the qualifications which the panel will take into consideration in making their selections.

Appointments to both the new ranks will be made periodically.

THE FIRST RECIPIENTS OF THE SENIOR ICI RESEARCH



Dr. J. H. Beynon

Dr. Beynon was born in Ystalyfera, Swansea, in 1923 and graduated in 1943 with first class honours from the University of Wales (University College, Swansea). He then became a Scientific Officer in the Research Wing of the Fighting Vehicle Design Department until May 1947, when he joined the Dyestuffs Division's Research Laboratories as a physicist.

His major scientific contribution has been in the field of mass spectrometry. He pioneered the application of this technique to enable the structure of organic substances to be determined from the breakdown pattern of their molecular ions from electron bombardment. This elegant method has made it possible to determine the precise chemical constitution of quite complex organic chemical compounds rapidly and using only very small amounts of material.

He has a distinguished international reputation for his important contributions to the field of mass spectrometry, and his book *Mass Spectrometry and its Applications to Organic Chemists* is widely used by specialists in this subject.

He was awarded the DSc degree of the University of Wales for his research contribution in 1961.



Dr. A. Dowden

Dennis Dowden graduated from Bristol University in 1935 with first class honours; after two years' research in catalysis at Bristol with the late Professor W. E. Garner he spent a year in the United States with Professor Beebe at Amherst College doing postgraduate research on the chemistry of reactions between chromium oxide catalysts and gases. He joined ICI Billingham Division on his return to this country in 1938. His whole career since that time has been based on the interest in catalysis which was founded by his work at Bristol and in America. The science of catalysis is still very imperfectly understood, but many of the advances of the last 25 years are associated with contributions which Dowden has made.

He has an international reputation in his field, and no conference or symposium on catalysis could be considered complete without his participation. In this country he has taken part in lecturing to post-graduate courses on catalysis at Newcastle and Manchester Universities, and frequently participates in colloquia in university research departments. Within ICI his pre-eminence is recognised by the very extensive use made of him as a consultant throughout the Company, and last year he was the obvious choice to lead an ICI symposium on catalysis.

FOR SCIENTISTS

ASSOCIATESHIPS



Dr. J. L. Moilliet

John Lewis Moilliet was born in Lampacitos, Mexico, in 1911; his father was English, his mother American. He was educated in Texas and graduated BA with first class honours in Chemistry from Houston University in 1931. His PhD was carried out at University College, London, and completed in 1933. He joined the Research Department of Dyestuffs Division on 1st September 1933 and was made Group Leader of the Dispersion Group of Physical Chemistry Section in 1940. During the war he spent some time, including most of 1942, on secondment to the Ministry of Supply for co-ordinating work on colloid and physical forms of explosives. In 1943 he returned to Blackley to take charge of the Colloid Science section of Physical Chemistry division. By this time he was an acknowledged authority in the country on all matters pertaining to colloid science. In 1948, when the Photographic division was formed, he became Section Leader of the Photosensitive Materials section. This broadened his knowledge of problems to which colloid science could be applied still further, and he was welcomed back to Physical Chemistry division to take charge of an enlarged Colloid section again in 1958.

Dr. Moilliet has many publications to his credit on all aspects of colloid science, including many fundamental theoretical papers. He has written two books which have become standard texts in colloid chemistry, in which field he now has an international reputation. He frequently lectures at universities and learned societies both in Britain and abroad, and has sat on many international bodies organising scientific meetings.



Dr. F. L. Rose

Dr. F. L. Rose joined the Dyestuffs Division of ICI from University College, Nottingham, in 1932, and he quickly made his mark as an inventive chemist, working in the field of azo dyestuffs. In 1936 he was selected as one of the original six research chemists to pioneer the Company's entry into the pharmaceutical field. In 1942 he was appointed as a Section Leader in what was then the Medicinals Division of the Research Department. Then followed a fruitful inventive period, the outstanding event being the discovery of 'Paludrine' in 1944. In recognition of this, Dr. Rose shared with his colleagues the late Dr. F. H. S. Curd and Dr. D. G. Davey the award of the Gold Medal of the Worshipful Company of Apothecaries. In 1949 this was followed by the OBE, and he became the first DSc of the University of Nottingham in 1950.

On the formation of the Pharmaceuticals Division of ICI in 1954 Dr. Rose became the Manager in charge of chemical research, a position which he still holds. He was the Tilden Lecturer to the Chemical Society in 1951 and was elected a Fellow of the Royal Society in 1957. In 1960 he was appointed Honorary Reader in the Manchester College of Science and Technology. In spite of his many interests and responsibilities, Dr. Rose still contrives to spend a part of his time working in the laboratory.



Dr. A. F. Wells

Alexander Frank Wells was born in 1912 and graduated BA from Queen's College, Oxford, in 1935 with first class honours in Chemistry. He did his early research under J. D. Bernal in Cambridge on crystal structures of inorganic compounds, for which he was awarded his PhD in 1937. In 1941 he moved to the Physics Department of the University of Birmingham to do research on luminescent compounds for radar and other purposes. He joined Dyestuffs Division in 1944 in the newly formed X-ray Section of the Physical Chemistry Division, Research Department, and is still in charge of this team.

Between 1941 and 1944 Dr. Wells collected together all the available material on the structures of inorganic compounds for his first book, *Structural Inorganic Chemistry*, first published by the Clarendon Press in 1945 and now in its third edition. This book is now a standard work for the teaching of this subject, both here and abroad; indeed, it has been called the most important work of its kind to appear since the war. His general interest in the basic geometry of crystal structures has since led to a series of papers in the literature and a further book, *The Third Dimension in Chemistry*, which was published in 1956. He is a frequent lecturer at universities and at international conferences, in 1964 he gave the Edward Herbert Boomer Memorial Lectures at the University of Alberta. He was awarded the degree of ScD Cambridge in 1956 on the basis of his original contributions to the literature.

People & Events



Two international "caps"

Mr. Stephen Richards (fourth from the right), an articled clerk in the Head Office Legal Department, was chosen to play hooker for England in the rugby international against Wales at Cardiff Arms Park on 16th January. Mr. Richards, a former Oxford Blue, started the season as reserve hooker for Richmond. His rapid rise to fame began when he played as substitute in a London Counties trial. He subsequently played

for London (in Paris), for Middlesex, and in all three England trials. A week earlier, Mr. Peter Stagg, a commercial assistant with Heavy Organic Chemicals Division, earned his first "cap" in the Scottish side which met France at Colombes, Paris. He is 6 ft. 8 in. tall, a second row forward and, like Stephen Richards, a former Oxford Blue. His home club is now Sale, Cheshire



Weeding with a watering can 'Weedol,' a new addition to the ICI range of garden products marketed by PPL, is sold in a 5s. 6d. pack of two drums, each containing 2 oz. of water-soluble paraquat granules. Paraquat is an ICI discovery which reduces hours of hand weeding and hoeing to a few minutes' spraying with a watering can. Paraquat acts through the green colouring matter in plants, using the energy of light to kill all foliage that it touches, and one treatment is enough to eradicate most annual weeds. Unlike other weedkillers, 'Weedol' is made harmless by contact with the soil, so nothing is left in the ground to harm other plants



Mr. Charles Wilson retires Mr. Charles Wilson, Head Office personnel manager for the past 10 years, retired on 31st December after 36 years with the Company. He is seen here (left) with Mr. C. M. Wright, ICI personnel director, at a farewell gathering of friends and colleagues at Millbank on 7th January, when he was presented with a set of silver candelabra and a wristwatch



First of two new giants One of the twin cooling towers being built to serve the new ammonia plants on the Billingham Site. Some indication of the size is that the dot inside the circle on the photograph is one of the contractor's men engaged on the construction. When completed the new towers will be 315 ft. high and will measure 210 ft. in diameter at the base and 136 ft. at the top. Already the first tower, nicknamed "Pinky" by its designers, is making its mark on the Billingham skyline



Exhibition in China Mr. Douglas Jay, President of the Board of Trade, with (left to right) Mr. Eliot Hodgkin, ICI deputy overseas controller and a member of the Sino-British Trade Council, Mr. B. Blackwell (Viking Engineering) and Mr. Jack Buist, head of Dyestuffs Division's Polymer and Chemicals Service Department, at the recent exhibition of British engineering in Peking, sponsored by the Sino-British Trade Council. ICI participated jointly with the Viking Engineering Co. in a demonstration of equipment for producing polyurethane foams.



ICI at the Boat Show The transparent underwater house designed by Plastics Division for Royal Engineer divers at the Daily Express Boat Show held in London last month. Almost 400 lb. of 'Perspex' went into the construction of the house, which was made by William J. Cox (Sales) Ltd. of Tring



Official opening of ICI House, Wellington ICI House, Wellington, the headquarters of ICI (New Zealand), was officially opened on 4th December by Mr. J. R. A. Glenn, chairman and managing director of ICIANZ, at a ceremony attended by the Prime Minister of New Zealand, Mr. K. J. Holyoake. ICI(NZ), formed 25 years ago, now employs 325 people and has sales offices in Auckland, Wellington and Christchurch and a factory near Wellington. Above: Mr. Holyoake signs the Visitors' Book. With him are (left) Mr. A. G. Robb, chairman and managing director of ICI(NZ) and Mr. Glenn



Fibre interests merged A new wholly owned ICI subsidiary, ICI Fibres Ltd., was formed on 1st January to continue the business activities formerly carried on by BNS in nylon and by Fibres Division in 'Terylene' and 'Ultron.' Mr. Leslie Williams, an ICI deputy chairman, is chairman of the new company, Mr. F. C. Bagnall and Mr. G. F. Whitby are deputy chairmen and Dr. E. B. Abbot is managing director. Above: the Harrogate site, formerly the headquarters of BNS



£450 Bonanza Two suggestions for improving the operation of the chloromethanes process at the Rocksavage Works of Mond Division recently earned Mr. Jimmy Japp, a leading hand on the plant, a £450 award under the ICI Suggestion Scheme. His suggested improvements to the piping system have resulted in substantial extra production of methylene chloride. He is seen here receiving his £450 cheque from Mr. J. E. A. Stuart, Division production services director



HOC expands alcohols production Heavy Organic Chemicals Division is to increase production of its carbonylation alcohols by 100,000 tons a year, and part of this expansion will be in the EEC at a site still to be announced. The remainder of the additional capacity will be installed at Billingham, where production from the existing plant (see photograph) is scheduled to reach 170,000 tons this year. The most important outlet for these alcohols is in the production of PVC, used in the manufacture of plastic sheeting for raincoats and curtains, leathercloth for upholstery and protective clothing, conveyor belting and electric cable insulation



Selected for Pigeon Olympiad A two-year-old pigeon bred by Mr. Harry Walker, a storeman at Wilton Works, was selected for the British team in the Pigeon Olympiad—the exhibition and congress of the Federation Internationale—held at Alexandra Palace, London, at the end of January. The bird, one of 30 pigeons in Mr. Walker's loft, is a chequer pied cock, so far unnamed. It has raced over 2000 miles and has an impressive list of successes



New Year Honours Two former directors and four present employees of the Company received awards in the New Year Honours list. Top (left to right): Mr. Lincoln Steel, who retired as economic planning director in 1960, received a knighthood; Mr. R. A. Banks, who retired last year as Agricultural Division liaison director, was awarded the CBE; Mr. Lionel Wharton,

Agricultural Division labour manager, gained the OBE. Above: Mr. H. E. Crocker, a sales section manager of the Agricultural Division, Mr. Richard Roberts, an assistant distribution manager of the Pharmaceuticals Division, and Mr. Andrew Bennie, a fitter at Dyestuffs Division's Grangemouth Works, all gained the MBE



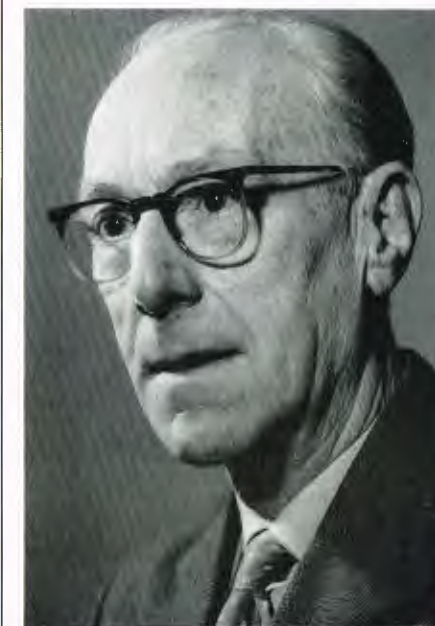
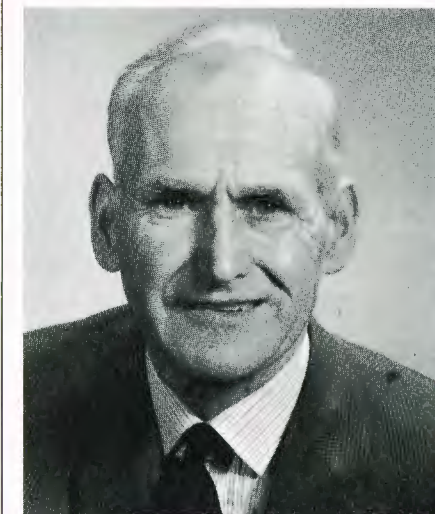
First taste of industry Two 15-year-old pupils of Heronswood Secondary Modern School at Welwyn, Stephen Little (left) and Robert Challand, spent a week at Plastics Division headquarters last month. They were the pioneers of a scheme to give older schoolchildren a taste of working in industry in which the Division is co-operating with the local youth employment service and the schools, together with other industries in the area. The boys are seen here with Mr. J. F. Cooper, a section leader in the Division Distribution Centre



Diamond Wedding Surrounded by their children, grandchildren and great-grandchildren, Mr. and Mrs. Alex Bowie celebrated their diamond wedding anniversary on 28th December at Nobel Division's Ardeer Recreation Club. Before his retirement in 1945 Mr. Bowie had been an electrician at Ardeer for 49 years. Earlier he had worked in the mines. He will be 85 this month, and his wife, Margaret, is 82

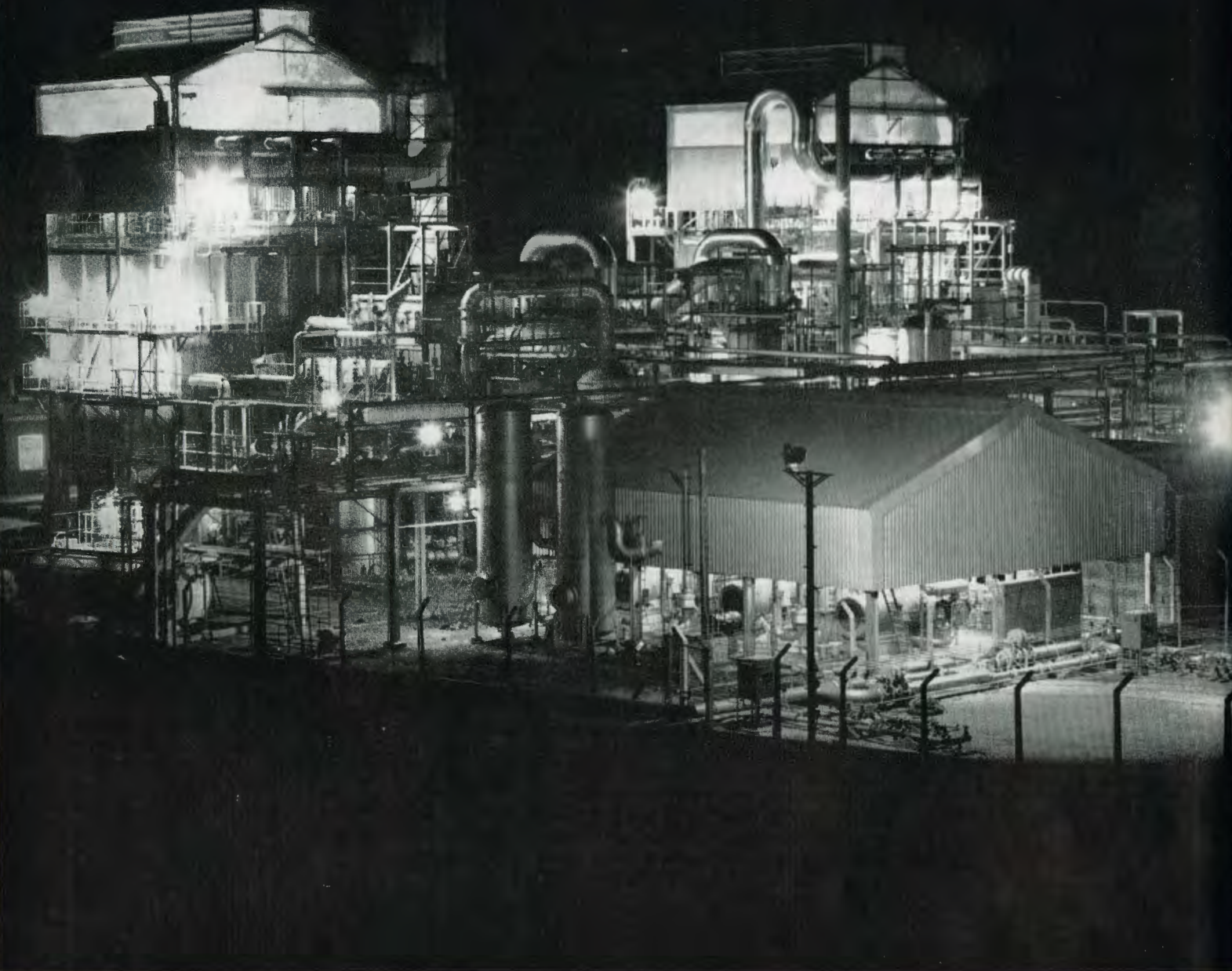


Dual-purpose bin This 'Lari-col' waste bin, which these kittens are exploring, is simply a two-gallon bucket which can, if required, be removed from the pedal-operated stand when the pedal is depressed. Built into the lid is a small container to hold an air freshener. Made from 'Alkathene,' ICI's polythene, it costs 19s. 11d. and is available from John Lewis, Selfridges and John Barker in London and most good hardware shops throughout the country



50 years' Service Three ICI employees have recently completed half a century's service with the Company. They are (from top) Mr. Albert Barrett of Mond Division (20th December), Mr. John Ellard of Dyestuffs Division (1st January) and Mr. Harry Mills of Mond Division (19th December)

ICI and the Gas Industry *by Richard Young*



The production and distribution of fuel gas for domestic and industrial purposes is one of the oldest industries in the country. Until quite recently, such "town gas" was made almost entirely by the carbonisation of coal. In this process, coal is heated in externally fired retorts. Volatile material in the coal is driven off and, after removal of tar, sulphur and other impurities, is collected in gasholders or distributed at low pressure to consumers. The involatile residue of the coal left behind in the retorts is coke, which is either sold as such or burnt in order to heat the retorts in which fresh coal is being carbonised.

After the war, the gas industry—which was nationalised in 1949—was stagnant. The production of town gas by coal carbonisation had become hopelessly uneconomic because of the high cost of coal. Besides being unable to expand because of rising costs, the industry presented to the public an unfavourable image of old-fashioned and smelly gasworks in the older parts of the town, monstrous and unsightly gasholders, appliances with designs apparently little changed since Victorian times—and danger. Each year, inevitably it seemed, fatalities due to gas leaks and accidents in the home were reported in the press with monotonous regularity. Old people, who often suffer from an impaired sense of smell, featured largely in the casualty line.

But things were stirring. Those at the centre of the gas industry soon decided that if gas were not to price itself out of the market it must in the future be made from raw materials other than coal. It is interesting to note that this is exactly parallel to the decision that ICI itself had to take in the post-war years—either to abandon coal as a raw material in the manufacture of ammonia and fertilizers or to stop their production. And this is where the connection between ICI and the now booming gas industry begins. But before we examine the big contribution ICI has made to the production of cheap gas, let us examine the nature of town gas more closely.

Coal gas contains a high proportion of hydrogen and also carbon monoxide, methane and other hydrocarbons. Be-

cause the industry was founded on coal gas, every gas-burning appliance is designed and adjusted to burn coal gas. This means that any gas produced in substitution of coal gas must quite closely resemble coal gas, otherwise the appliance will not work properly. For instance, if the new gas has too little hydrogen the gas will not burn quickly enough and the flame will lift off the burner and go out. If the methane content is too low the gas will not have the heating value that the supplier is legally obliged to declare and maintain: the law also says that the gas must have a negligible sulphur content and must be supplied continuously at a certain minimum pressure—which means that the producing process must be extremely reliable.

Although it is now possible to reduce the toxicity of gases by reduction of the deadly carbon monoxide content (ICI has already played a part in this process by supplying catalyst), the law has not yet put a limit on the toxicity of gas. However, the UK Gas Council, which supervises the activities of the various regional Gas Boards, has recommended that all new plants constructed should be capable of producing gas containing only a minor amount of carbon monoxide. Such a gas is almost non-poisonous.

The gas industry's first move towards breaking the stranglehold of high coal prices was the decision, taken in 1961, to import liquefied methane gas from the Sahara. These imports, which will provide about 10 per cent of the nation's gaseous fuel requirements, are just starting at the present time. This methane must, of course, have hydrogen and other gases added to it to make it suitable for burning in UK homes.

However, at about this time ICI demonstrated on a large scale at Heysham, Billingham and Severnside its now famous process for the production of hydrogen from naphtha, one of the products obtained from the distillation of crude oil. The naphtha feedstock was so cheap (it is even cheaper now), the process so efficient, and the cost of the plant so low, that it was immediately apparent that although the process had been developed for the production of hydrogen for synthesis purposes, it would be the most economic method of producing hydrogen for town gas. Further, by suitable adjustment of process conditions it was found possible, without significant change to the plant or

An ICI steam-naphtha plant in operation at Southerngas Hythe Works. The contractors were Humphreys and Glasgow Ltd. (Photograph by courtesy of Southerngas)

the process, simultaneously to produce methane, a necessary constituent of town gas.

Gas produced in this way is a good deal cheaper than that derived from imported methane, and the gas industry was not slow to take advantage of this fact. A large number of plants to operate the ICI process were ordered through ICI's licensed contractors, and are still being ordered. Many of these plants are already in operation. As will be seen from the list, ICI plants are now to be found in every region. These plants represent 40 per cent of the nation's gas-producing capacity. They are of the largest size: that at Tipton alone, for instance, will make 200 million cubic feet of town gas per day. This makes it by far the largest town gas plant in the world, and it will be connected by high-pressure transmission grid to other distant parts of the region.

Since the ICI process operates at high pressure (unlike the older gas-making process), no compressors will be needed to send the gas on its way to the consumers—a further large saving in cost. The ICI process removes all the sulphur from the naphtha before it is gasified, and therefore there is no sulphur in the gas. The plant incorporates equipment for the elimination of carbon monoxide from the gas, which is therefore non-toxic. The

process is very reliable, so the Gas Boards can build large units with the confidence that they will meet their statutory obligation to supply. The plant can be highly automated to produce continuously gas of the required specification. Finally, the capital cost of an ICI plant is only about one-eighth that of one using one of the older processes.

The cost of gas before distribution, including capital charges, from an ICI plant is only about half that of gas from the cheapest of the alternative processes based on coal. Already some regional Gas Boards have reduced the price of gas to the consumer, and others have announced that there will be no increase. From being an industry with a negligible rate of growth, gas sales are now increasing at rates up to 10% per annum in some regions.

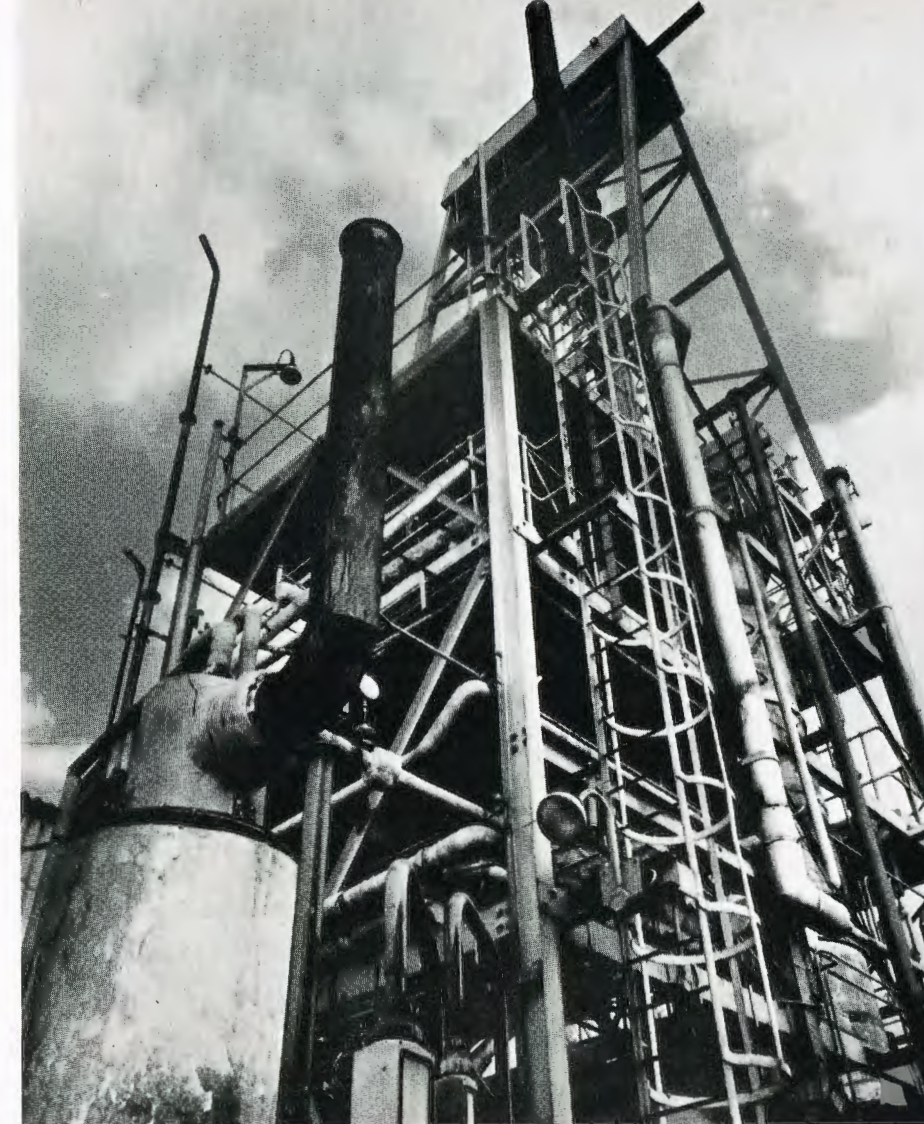
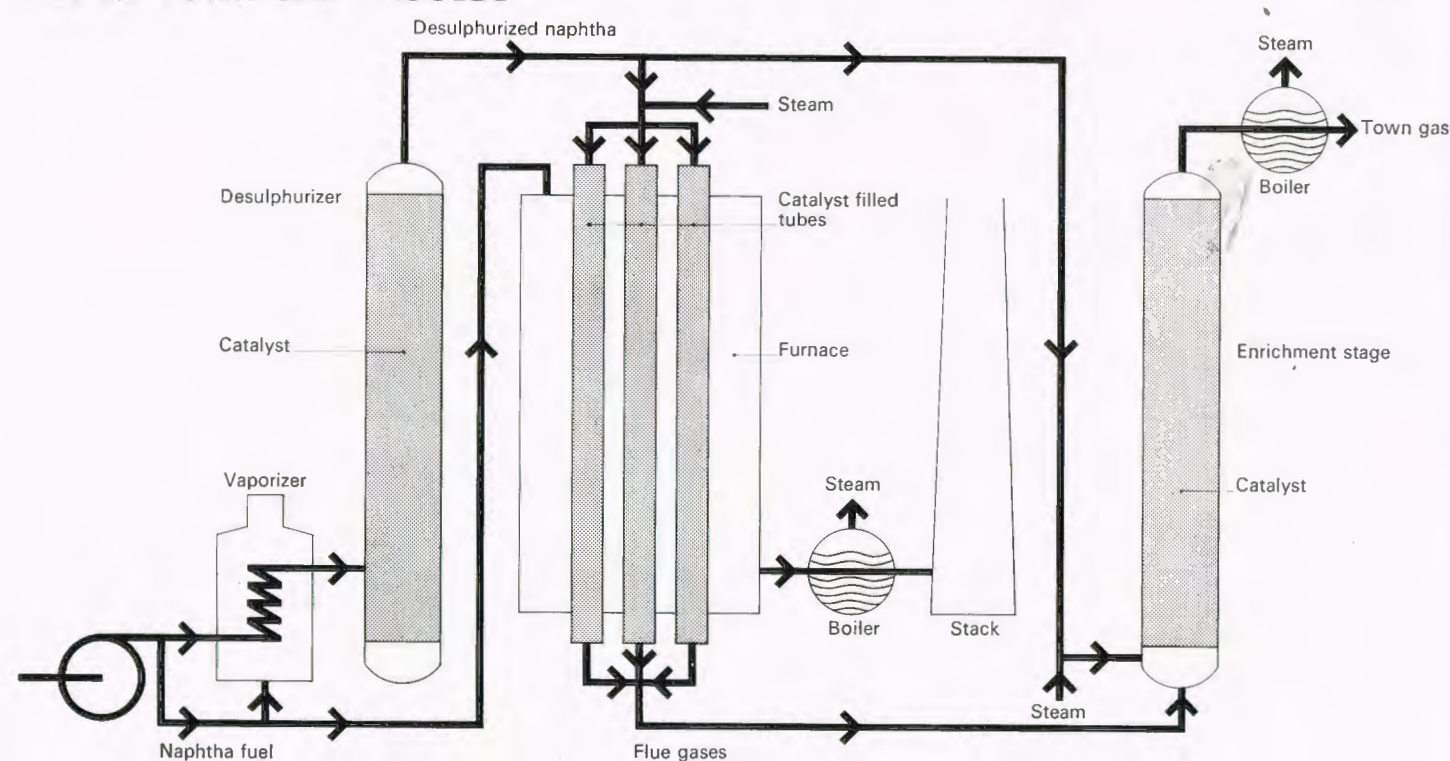
Still more rapid progress is likely to be made in the future, and ICI intends to continue to improve its process so as to maintain its technical lead in gas-producing techniques. The two pilot plants at Billingham, which were used for the development of the original process for the production of synthesis gas, have over the last year or so been used to effect a significant development in the production of town gas. The original process, which has been so widely adopted, could not con-

veniently and economically be used to produce a gas containing the full amount of methane needed in the UK gas specification. Up to now it has been necessary, therefore, to mix the product gas with additional methane. This enrichment methane is obtained either from the national grid which distributes the methane imported as liquid from the Sahara, or from one of two processes developed by the Gas Council which produce methane from naphtha. The new ICI development enables gas from the reformer to be brought to the required methane content by injecting additional naphtha and steam in a second stage. The new "ICI Town Gas Process" has attracted widespread interest among gas undertakings, and currently many tenders submitted by our contractors are under consideration.

Activity is not limited to the UK. Recently two ICI plants to make town gas were started up in Tokyo, and a third has been ordered. Many further plants are in operation or under construction in Germany and France.

ICI is proud to be playing a major part in the rebirth of the gas industry, and looks forward to continued co-operation which will bring still greater quantities of cheaper, safer and better gas to the homes and industry of the country.

THE ICI TOWN GAS PROCESS



One of the twin pilot plants on which the ICI steam-naphtha and the ICI town gas processes were developed

TOWN GAS PLANTS IN THE UK USING THE ICI PROCESS

Most of the plants have more than one unit

The total number of units is about 75

Scottish Gas Board

Provan*
Kilmarnock

Northern Gas Board

Hartlepool*

North-Western Gas Board

Preston
Bradford Road, Manchester
Linacre

North Eastern Gas Board

Leeds*
Dewsbury

West Midlands Gas Board

Coleshill*
Tipton

East Midlands Gas Board

Sheffield*
Killingholme

Wales Gas Board

Llandarcy*

South Western Gas Board

Avonmouth*

Southern Gas Board

Hythe*
Reading

Eastern Gas Board

Hitchin*

North Thames Gas Board

Bromley-by-Bow*
Canvey Island

South Eastern Gas Board

East Greenwich*
Isle of Grain*
Brighton

* At least one of the units at the site is in operation

THIS is not a tale of heroic deeds. It is simply the story of what befell three ordinary men when travelling on ICI business in the year 1943.

On a Sunday morning early in February of that year, the three of us stood shivering on a Manchester station platform waiting for our train to Swansea. My two companions were a physicist and an organic chemist whose names are now well known in ICI. We were about to depart for the relative safety of the New World, and our thoughts were with the families we were leaving behind in war-torn England.

Swansea, battered by enemy bombs, was a depressing sight when we arrived there late the same evening after a cold and miserable journey. The sight next morning of broken and fire-scarred buildings all round the docks did nothing to raise our spirits as we went aboard our ship, a medium-size merchantman.

We sailed after dark, and about noon on Thursday were joined by four vessels coming out of the Mersey, led by one which we were informed was the *Manchester Merchant*. We reflected on the apparent stupidity which had sent us off

bowed vessel, clearly having difficulty in keeping up; nearby a corvette, her white ensign fluttering bravely, at times almost disappearing in the spume-crested water.

We were armed, we found, with a four-inch gun aft and four Oerlikon guns amidships. The unfortunate gun crews, who had unwisely exchanged the boredom and relative security of A-A sites in England for the hazardous life at sea, were huddled in miserable groups behind such slight shelter as they could find on deck.

As the daylight faded we went to join the other passengers in the fetid atmosphere of the blacked-out saloon. There were six of us altogether, two being ship's engineers en route to join ship at Halifax, the other a young officer of the Royal Canadian Navy. The elder of the two engineers, we found later, had already been thirty-two days in an open boat after his ship had been sunk and the boats shelled off Grand Banks. Miraculously his boat had survived to run ashore on the island of Lewis, after a superb piece of seamanship, with but six men still alive.

That night the crash of water against the hull, the creaking and shuddering of

seas and a warm sun! Where had we got to? We did not know. We got out deck chairs and basked in the sunlight.

Then once more the unexpected, an aeroplane in mid-Atlantic! We did not believe it possible. We watched as it slowly circled the convoy and disappeared in the distance. Soon afterwards the captain came on deck on his way to the bridge. We exchanged pleasantries, but as he left he said to me "Sleep in your clothes to-night and tell the other passengers." I passed on the warning. What did it mean? Our young naval officer mounted the bridge and came back with the news the aeroplane had brought: "There are thirteen submarines ahead!"

The convoy was now steaming in regular formation, thirty-nine ships in all, in eight columns. To starboard of us was a Norwegian with large booms extended carrying torpedo nets: to port, a graceful Frenchman with the lines of a steam yacht. In the centre of the convoy was a large tanker, alongside which one or other of our escorts would from time to time appear, presumably to take in oil. Full astern a cross-Channel steamer acted

Atlantic Interlude

by W. F. Osborne

in discomfort to Swansea, when we might have joined ship at Liverpool. We were to revise these views later. Saturday evening saw us in Belfast Lough, the final assembly point for the Atlantic crossing, surrounded by merchant ships of all shapes and sizes.

After nightfall we knew by the steady movement of the ship as she rose to the Atlantic swell that we were at last under way in the open sea. Our lifejackets and clothes were ready to hand, the cabin doors fixed full open lest we should be trapped in our cabin if the ship were torpedoed. The next day a high sea was running, the water pouring over the forecastle, and the whole ship enveloped in a wild mass of spray thrown up by the screaming wind. Overhead were grey skies, and all around us ships, British, Dutch, Norwegian, Free French and American, merchantmen and tankers, corvettes and frigates, plunging and swaying in all directions in the heavy seas. Our convoy was apparently arranged in eight lines of five ships in column.

26 Immediately behind us was a large bluff-

the ship's frame, the rattling of loose parts, indicated that the intensity of the storm had increased. In the morning we found the convoy widely scattered: several of our near neighbours of yesterday were hull down far astern or nowhere in sight, and ships were rolling wildly with their screws well out of the water. For ten long days the storm continued without abatement, the brief daylight hours being spent by our anxious escorts in shepherding the ships together again, only to find them once more dispersed in the morning. Our mean speed during these difficult days was two and a half knots.

By now we were experienced sailors, and to keep ourselves fit we marched bravely up and down the limited free space on deck. This took some doing at first, but we soon learned the trick of timing our advances to the rhythm of the ship. The nights were still an ordeal. Soon we gave up the attempt to sleep at nights and tried to make up during the day.

Overnight, we unexpectedly ran into quiet water. It seemed too good to be true. After days of violent storm, calm

as rescue ship. Everywhere silence, except for the gentle swish of the waves.

It was Sunday at lunch when the fun began. Loud explosions drew us, full of eager curiosity, up on deck, where we had a grandstand view of our escorts throwing depth charges. As we watched, the sea erupted into pyramids of foam, the corvettes steaming at high speed among them. Gradually we drew away and once more settled down in our deck chairs.

We were playing bridge that night when the alarm bell went. Seizing our coats and lifejackets, we rushed on deck to be greeted by the loud swish of rockets being fired from our ship. In a moment the sky was ablaze with parachute flares. Then distantly on our port quarter a rumpus started. Our escorts were nowhere in sight. They had fallen astern seeking to catch the submarines silhouetted against the light. What exactly happened we did not know, but learned afterwards that one of our escorts had been badly damaged in a surface action.

About four a.m. next morning we were again aroused: again the rockets and



DEL'ORCO

distant gunfire on our port quarter. This became routine each night and early morning. We were lucky, for action seemed to be confined to that unfortunate port quarter. But as the days went by we found a significant reduction in the number of ships. Gone was our rescue ship, and another of our escorts had been crippled. Four—five—seven—eight ships had gone, and the convoy had been rearranged. We were now No. 2 on the starboard column, lying astern of *Manchester Merchant*.

On Wednesday morning, following the usual 4 a.m. alarm, we sat shivering on deck in hazy moonlight somewhere off Grand Banks. Suddenly, for no apparent reason, some trigger-happy fool in a ship astern of us fired his Oerlikon, and a stream of red tracer shells shot across the convoy, a perfect signal to a waiting enemy. Then silence. The icy cold gripped as we walked up and down, stamping our feet to keep warm. Alongside us steamed our graceful Frenchman. As we watched her gliding through the half-light, a red glow shone close to her stern and a column of water shot up mast high. Strange it seemed to us that there was no sound, except for a fluttering over

our heads like the passing of a large bird. Perhaps it was part of her plating. Quickly a red light signal appeared at her masthead, and as she began to lose speed we could see her longboat being lowered and the torches of her crew as they scrambled into the boats. Then we left her to her fate.

Slowly we realised the truth: we were sitting ducks! Our escorts had by now fired all their depth charges, and to guard a convoy having a perimeter of some sixteen miles with one frigate and three remaining corvettes was hopeless. The submarines could dive under the convoy and quickly switch the attack to another quarter. We learned afterwards that at least one had been travelling during the daytime underneath one of our ships, where it was, of course, immune from attack, falling back and surfacing when darkness fell.

Early in the morning of Thursday, 24th February, I was awakened by a terrifying crash, followed by a violent slewing of the ship to starboard. Saying to myself, "This is it!", I rushed on deck. As I emerged into the misty moonlight, there was a sudden cry, "Look! A ship going down!" There, alongside us on the port bow, a

ship was standing vertically in the water, her funnel just above the surface. She hung there poised for a moment, then slowly went down vertically. The cries of the men in the water could be heard above the roar of the steam and air escaping from her hull as she sank, but I could see the red lights on the lifejackets of only two men in the water as we went past. (I learned some years later that twenty-two of her crew were saved, all twenty-four passengers being lost.) Thus ended the *Manchester Merchant*. She had probably been hit by one or more torpedoes in a salvo fired at us diagonally through the convoy. Only swift action by our helmsman had saved us from a like fate.

The thick fog which thereafter enveloped us was probably our salvation. For two anxious days we groped our way through it at slow speed: then the welcome sight of eight American flush-deck destroyers coming out of the haze. Halifax at last, and we were safe! We had been at sea for twenty-two days. Two days later we walked out of Montreal station into a blaze of lights, neon signs, and shop windows packed with luscious fruits such as we had not seen for years. We were back in a world of sanity.



Carnival in Trinidad

by Tony Edwards

Scenes from the Carnival in full swing. Above: a "sailor" band; above right: a "devil"; left: a band of "Mexican bandits"

As dawn breaks over the green hills and red roofs of Port of Spain on the Monday before Lent the day opens dramatically to the thump of drums from all parts of the city. You are awakened with the tense intimation: "A band is coming!" and no matter how sleepy you are you simply cannot resist the urge to get up and lean out of the window.

Carnival is here, and its magic is infectious. Whether you are a Trinidadian or not it swamps your imagination and you catch the fever of gaiety.

In the weeks before Carnival the festive air of Trinidad is augmented by social events public and private—dances and "freenesses." A freeness is a party at someone's home, and for the evening

open house is declared and any friend may drop in for drinks and dancing whether invited or not. The air reverberates all night long with the sound of steel pans as the bands work up for the big revel.

Monday is "Ole Maass," and on this day any old costume goes. From early morning to midnight the streets teem with steel band musicians and bands of masqueraders who follow behind them. Trinidadians spare no expense when it comes to costumes for Carnival, and people save for months to appear in all their grandeur for two days.

Long before nine o'clock in the downtown area the noise will be at its height and motor traffic at a crawl as the crowds



of revellers caper and dance—"jump up," as they say in Trinidad. Business goes on as usual, but the feeling is that the sales-girls and clerks are only putting half their minds to the job as yelling black-painted savages war-dance in mid-street. A pack of prancing devils bursts round a corner followed by a band of sailors or Red Indians, and the streets are a mass of colour and noise.

By noon the roads are a turbulent river of people, and no one can escape the impact of the steel bands as they go past—

the vibration of the pans can be felt to one's very core. Right on into the evening and night it continues, and one wonders how the revellers can keep on prancing and dancing. The calypso rhythm is constant and the clang and clash of metal on metal overwhelming. In homes, parties are going on as revellers revive themselves or prepare to fling themselves into the frenzy outside.

On Tuesday the routine is the same—you wake up to the noise of drums and wonder whether the revellers have gone

on capering and yelling all through the night—perhaps they have. Fancy clowns vie with Romans and a chain gang, and suddenly four hundred sailors are ashore in their white costumes. But by noon a different pattern has emerged as the elegantly clad carnival bands come out and everyone moves to the open space of the savannah. These bands have been planned for many months, and the costumes correct to every detail reveal an accurate knowledge of the period they are portraying. The gorgeously arranged



Above: a "Red Indian" band
Top: an "Ole Maass" band
Below: a band of "African warriors"

kings and queens of England parade in "A Saga of Merrie England" and the sun flashes from the armour of a band three hundred strong called "The Glory that was Greece." A group of Parisians pass on their way to storm the Bastille, US Marines land again on Guadalcanal as twenty thousand people pass in a mighty river of colour through the racecourse,



where the judges will decide which bands deserve prizes.

A beautiful girl is crowned as Carnival Queen and wins a motor car and free trip to North America as a prize. There is keen rivalry between the steel bands as they are judged; indeed, it is so keen that very often free fights take place in downtown streets when "enemy" bands meet during the festivities. Steel bands are known by odd names such as "Desperadoes," "Invaders" and "Nazis," and all the members have a uniform.

By Tuesday night, despite the activity of the past two days, Carnival reaches a frenzied peak: everyone jumps up. For this is Last Lap.

From eleven to midnight is the hour of final crescendo, the noise soars to new heights, the dancing swirls until the colours blur.

Then twelve o'clock strikes and the drums and shouting fade away. The streets are deserted except for exhausted revellers on their way home. For Ash Wednesday has come. There is Mass at six o'clock.



A reproduction of one of Mr. J. D. Lawley's paintings of Sable Island

The wild horses of Sable Island

by Consuelo Allen

EVERYBODY asked us the same questions: Why? and Where is it? To answer the first: Mr. Diefenbaker and J. D. Lawley; the second: 160 miles due east from Halifax, Nova Scotia, right out in the open Atlantic, with the next land Europe.

The first reply obviously needs some explanation, for many an eyebrow has been raised on hearing it. The winter of 1960, while we were living in Montreal, was a very severe one, and the press often referred to the wild ponies of Sable Island and the miseries they were experiencing through lack of food. It was suggested that they should be exterminated, but this produced a loud outcry from animal lovers all over Canada. Mr. Diefenbaker, who was then Prime Minister, silenced the argument by ordering that fodder be dropped by the RCAF.

Then in 1962 J. D. Lawley, the Montreal painter, had a one-man show of his Sable Island pictures, and we bought two small paintings at his exhibition.

So our curiosity was aroused, and we resolved some day we would go there and see the island and horses for ourselves. Time passed and we found ourselves living in London again; but in 1964 we got to Sable Island, and a great pleasure it was.

A little two-engined brown and white Piper Apache was chartered, and so we made our way to Halifax Airport. There we waited a few minutes while beach conditions at the island were checked, and then, when the all clear was received and our box lunches had been loaded, we squeezed ourselves into the plane. The OK from the control tower for take-off was howled into our gabbling loud-speaker, and with a short roaring run we were airborne. Our pilot told us that we had chosen *the* day of the year to make the trip—fine all the way and set fair—as even when weather conditions are good on the mainland, cloud has been found out at sea and planes have had to make several attempts before finding the island below.

There was not a cloud in the sky, and soon we were flying over typical North Canadian landscape—pines and lakes and rocks. In a few minutes the coast came into view and then the open Atlantic stretched out ahead. It seemed appallingly empty, though later we passed two or three fishing vessels. We settled ourselves for the flight, which from leaving land was to take about an hour and a half; it

was smooth and uneventful, though thoughts of missing Sable Island altogether and of “next stop Ireland” did cross our minds.

Then at the estimated time there it was, dead ahead, foaming white waves breaking on the sand-bars, the end of the Continental shelf. We came in on the western tip of this lonely island, which is about 20 miles long, a mile wide, and roughly banana-shaped, disturbing in our flight a big clump of seals sunning themselves on the beach and sending them rushing into the sea. As we raced by, we came suddenly on a dramatic sight: our first view of the wild horses in a hollow in the dunes. We had half wondered if we would see any horses at all. We landed on the sand by a lagoon, with two big promontories shimmering in the background

diately made their appearance over the dunes, two of them riding tamed ponies and the third sitting in a wooden contraption with rubber wheels hauled by a third pony. A Caterpillar car had also started out as part of the reception but had broken down—not an infrequent occurrence, we gathered. If this sounds like a welcome committee I should explain that the total population of Sable Island is thirteen—one of them just a lad, in fact he was described to us as “a cigar-chewing boy,” though we did not lay eyes on him.

Declining a pony ride, we started across the hard sand towards the “village,” which consists of two houses and a garage-cum-workshop, when over the top of the dunes we saw a horse’s head. There he stood proudly on the crest looking



‘foaming white waves breaking on the sand bars’

like a mirage. The meteorological people, who with the lighthouse keepers live on the island, had prepared a suitable landing strip or “safe beach,” with red flags as markers and a windsock—safe for today but perhaps not so tomorrow.

Sable Island gets its name from the French word for sand and has no connection at all with the fur-bearing animals. Never was a place better named: there is not a stone or rock or tree on it, just sand. There is a ridge or backbone of sand dunes running the whole length of the island, with coarse windswept grass and other vegetation and, surprisingly, freshwater ponds, on which the ponies depend.

Our plane’s arrival was obviously something of an event, as the locals imme-

down at the flying machine and the humans clustered round it. We continued walking, full of confidence, which was short-lived when we realised he was galloping straight for us and it looked as if he meant business. Quite what his intentions were we never found out, for we stopped, not wishing for what promised to be a head-on collision with him. We waited, furtively looking for cover. Of course there wasn’t any. Then he made off, and the rest of the group caught up with us and we all climbed the dune. This was really hard work, since it was a matter of three steps up and one back as the sand trickled away underfoot, but we made it to the top and were faced with an enchanting sight.

In the hollow was a small freshwater pond and on the opposite bank a family of wild horses composed of five mares and four foals, all the property of the stallion who had come out to inspect us. Though he allowed us to look at his family he never stopped patrolling, keeping himself between them and us for as long as we were there.

To see this blue lagoon at the bottom of the coarse grass-covered dune was quite unexpected, but it gave us a moment of great pleasure, as one of the mares led the way into it, followed by the foals, one of which got a resounding kick for some misdeemeanour. They trailed to a small islet in the centre, and then "father" herded them all back to where he wanted to go.

The first thrill of seeing the wild horses over, we took time to look around us, and were interested to discover we were standing on a wild cranberry patch. The berries were not yet ripe, but some showed promise of becoming so shortly. We were told that this was the only export from the island, and even then not commercial, just a few cans for friends.

All the flora on the island is stunted by

'in the hollow was a small freshwater pond'



the wind and no more than a few inches high, though the size of the flowers is normal. Wild strawberries and wild roses abounded; vetch grew in fairly large patches on another dune; Michaelmas daisies with next to no stalk; golden rod and evening primrose were also there, together with some stunted creeping junipers.

Before lunching we made our way to the northern or sheltered shore of the island in hope of finding some "treasure" shells, but were disappointed. A few commonplace and dull shells were all we found, but we did come on a splendid crop of electric light bulbs of every shape and description, including a fluorescent tube. This made us wonder whether a ship carrying a cargo of bulbs had been among the 200 recorded shipwrecks in the vicinity since 1800, which have made it known as the graveyard of the Atlantic.

We walked back to our plane, recrossing the ridge and making a small detour in order to take another look at the wild ponies, and once again the stallion stood—at a distance this time—between his family and ourselves. We heard later that

he was to be treated with respect and that only that morning he had had a fight with another stallion who had come too close to his herd, possibly looking for a wife.

After our picnic-box lunch we explored a little further and began by skirting the big lagoon near which we had landed, where we admired many sandpipers on their frail little legs dipping their heads into the water and extracting some delicacy. On a couple of occasions our feet sank ankle deep or more into the sand, and it was just as well that we only learned later that there are quicksands in the island. As we crossed this large, flat expanse of sand known as the desert we noticed that its colour changed from the usual beige to a darker colour, black-rimmed with shimmering particles, and we thought of the possibility of iron. A little further on the colour changed again, this time to black, forming a shell pattern which made us think of oil. But this was a false alarm, as we were later told that prospecting for oil on a large scale had taken place without success in the summer of 1960.

On the exposed, or south shore, the



'a clump of seals sunning themselves on the beach'

great Atlantic rollers pounded and thundered with the surf forming a tiara of foam for the emerald and cobalt waves that broke upon it. Shades of colour in the sea were distinct and spectacularly beautiful.

We then boarded the Apache again and made an aerial tour of the island, bumping, lurching and swooping in order to get as close a look as possible of the many colonies of ponies scattered along the dunes. These were very much wilder than the group we had photographed and ran in all directions as we flew over, but always with the stallion rallying and shepherding his herd. We flew over many more seals, who also scurried into the water but could be seen as clearly in the sea as on land, as the water was gin-clear, completely transparent. Further along the coast the carcass of a whale washed up on the beach was being devoured by seagulls, and a short distance away the complete outline of a submerged wreck was visible, with only its mast sticking out of the water. Another wreck a few hundred yards further on, and the lighthouse at the Eastern end, brought us to the end of Sable Island, though the sandbar continued just below the surface for a mile or more beyond the end of the land in a wicked lather of foam. It was with regret that we noticed our plane gaining height and the lurches and bumps subsiding as we headed for Halifax, as comfortably as we had come, though wind and clouds had started to appear in the sky before we landed.

It was only upon our return to Montreal that we actually met Mr. Lawley, and we wished we had done so before instead of after our visit to the island. Lawley, who is a "Bluenose," as Nova Scotians are known, has loved Sable Island since childhood and was delighted to meet someone who had been there. His love and knowledge—both of fact and legend—are great. As a child he even came close to owning one of the ponies, for in those days they were often brought to the mainland and tamed to work as pit ponies in the Nova Scotia coalfields.

We had read that originally the horses came from the French ship *L'Africaine*, which foundered on the sandbars some 250 years ago, but Mr. Lawley denied this and said that in about 1740 an attempt had been made to colonise the island from Massachusetts and several families with their animals had been sent out there. The weather and loneliness had defeated them and they returned, leaving the animals behind. Whichever version is the right one—and we incline to the first as the more romantic—the staggering thing is that the horses have managed to survive, for the climate is rough—though not abominable—and they have to winter in the open.

Mr. Lawley also told us that the lagoon near where we had landed had, years ago, been open to the sea and that two ships had taken refuge there in a storm. When the storm abated the sands had shifted and they found themselves landlocked and trapped. With the passage of

time the sand covered the ships, and according to legend those odd promontories at the eastern end of the lagoon, which we had noticed on landing, encase them.

Ghost stories of the island are plentiful, and the members of the life-saving crews who for many years were stationed there must make excellent raconteurs round the hearth when telling their experiences and of the spooks and phantasms that they encountered. Even to this day sailors claim that Sable Island sands are possessed of some peculiar quality which will affect the best compass, and when the wind howls and the fogs swirl down it would not be difficult to believe in anything—from drowned Frenchmen emerging from their watery graves if the *Mar-seillaise* is played, to tame ponies standing rigid and refusing to follow certain paths, and a ghost ship, with sails furled, which is seen on each side of the island within seconds.

This indeed was a "stolen day," a day in a thousand, for I doubt if you could get much further away from it all than Sable Island, truly one of the ends of the earth; but I do know that for us it was memorably happy and beautiful.

Flying back to London in a big commercial jet a few days later, my husband asked the captain, who was doing his rounds, if Sable Island had been visible on this flight. He replied, "We've just flown over it. And I've seen it today for the first time in ten years of transatlantic flying."



'among the 200 recorded shipwrecks since A.D. 1800'

"Surtsey" Volcano, Iceland by *R. S. Clarke (Agricultural Division)*

